Adverse Effects of Medicines

What is an Adverse Effect?

- An adverse effect is an unintended and harmful or undesirable effect that occurs when a medicine is used at normal therapeutic doses.
- May be mild, moderate, or severe
- May require dose adjustment or discontinuation
- **WHO Definition**
  - As a response to a drug that is noxious (Harmful) and unintended, and that occurs at doses normally used in human for the prophylaxis's, diagnosis or therapy of disease or for the modification of physiological function

Adverse Effect vs Side Effect

- Side effect: any unintended effect (may be beneficial or harmful).
- Adverse effect: specifically harmful and undesirable.
- Not all side effects are adverse effects.

Why Are Adverse Effects Important?

- Patient safety
- Treatment adherence
  - To contribute to the assessments of benefits, harms , effectiveness and risk of medicine
- Quality of life
- Hospitalization and mortality
- Pharmacovigilance
  - The science and set of activities dedicated to the detection, assessment, understanding, and prevention of adverse effects or other drug-related problems.

Common Causes

- Dose-related effects
- Allergy/hypersensitivity
- Drug interactions
- Patient factors (age, pregnancy, liver/kidney disease)
- Medication errors

Different causes of adverse drug reaction mentioned in Ayurveda

1. Drug interaction (Virudda Dravya prayoga)
2. Iatrogenic (Vaidhyakruti)
3. Over dose (Atimatra Dravya prayoga)
4. Administration of unwholesome drugs (Ahitatama dravyas)
5. Administration of medicine in diverse pathological stages (Avastanusara Dravya prayoga)
6. Therapeutic procedural complications (Panchakarma vyapad)
7. Improper use of Rasaushadi (Medicines of mineral origin)

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- **Abhesaja:** Use of improper, non-standardized, or incorrectly formulated herbal and mineral combinations.

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- **Shodhana Failure:** Inadequate detoxification processing (Shodhana) of mineral and poisonous herbal drugs (*Rasadravyas*) like *Vatsanabha* or heavy metals (mercury, lead, arsenic).

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- **Aushadha Sevana Kala:** Wrong timing of drug administration relative to food and digestion capacity (*Agni*).

Examples

- NSAIDs → gastric ulcer
- Penicillin → allergy
- Aminoglycosides → nephrotoxicity
- Warfarin → bleeding
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Common Causes of Adverse Effects

- **Heavy Metal Toxicity**: Unregulated products may contain lead, mercury, or arsenic.
- **Adulteration**: Some commercial mixtures secretly add modern steroids or active pharmaceuticals.
- **Herb-Drug Interactions**: Combining herbs with prescription pills alters blood pressure, thinning, or seizure control.
- **Improper Dosing**: Misusing raw or potent plants like *Vatsanabha* (aconite) leads to acute poisoning.

Gastrointestinal Nausea, diarrhea, bloating	• Overuse of Ashwagandha or harsh roots
Hepatotoxicity Liver injury, jaundice	• Impure mineral ash (Bhasma) or toxic alkaloids
Neurological Tremors, dizziness, headaches	• Heavy metal accumulation or improper processing
Dermatological Rashes, hypersensitivity	• Topical herbs like Bakuchi reacting with sunlight

A 35 year old woman with hepatitis took ayurvedic powder medicine and swarnabhasma (gold salt) and had her liver injury worsened, possibly due to alkaloids, and developed nephrotic syndrome, possibly due to gold salt.

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A 47 year old woman with rheumatoid arthritis was taking an unknown tablet containing steroid as an adulterant for 2 years and developed side effects typical of steroid excess.

Prevention

- • Correct prescribing
- • Check allergies
- • Avoid interactions
- • Monitor patients
- • Educate patients
- • Report adverse reactions

Key facts

- • Adverse effects are harmful unintended effects.
- • Early recognition improves patient safety.
- • Prevention and reporting are essential.

Thank You

- Questions?